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HUERTA, ALEXANDER Q	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/644,350	MCDONALD, RUSSEL	
	Examiner	Art Unit	
	Alexander Q. Huerta	4115	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☒ Claim(s) *11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 August 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 11 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 11 states "A method for identifying recordings in broadcast radio programming containing other content as set forth in claim 9", but does not set forth further limiting, patentable content.

Claim Rejections - 35 USC § 102

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-12,13,15,16,18 are rejected under 35 U.S.C. 102(e) as being anticipated by Herley (United States Patent Application Publication 2003/0231868), herein referenced as Herley.

Regarding **claim 1**, Herley discloses a system and method for identifying and segmenting repeating media objects embedded in a stream. In addition, Herley discloses that once the media stream has been acquired, the stored media stream is examined to determine a probability that an object of a sought class, i.e., song, jingle, video, advertisement, etc., is present at a portion of the stream being examined, which reads on claimed "receiving said broadcast program signal from an external source, recording said broadcast program signal as received in a storage device", as disclosed

in paragraph [0024] and further exhibited in figure 1 elements (140,150). In addition, Herley further discloses an "object extractor" as described herein automatically identifies and segments repeating objects in a media stream comprised of repeating and non-repeating objects, which reads on claimed "identifying repeating segments of said broadcast program signal", as disclosed in paragraph [0010].

Regarding **claim 2**, Herley discloses everything as claimed above (see claim 1). In addition, Herley discloses that audio fingerprinting schemes take a known object, and reduce that object to a set of parameters, such as, for example, frequency content, energy level, etc. These parameters are then stored in a database of known objects. Sampled portions of the streaming media are then compared to the fingerprints in the database for identification purposes, which reads on claimed "the step of comparing a portion of said broadcast program signal with previously received and recorded portions of said broadcast program signal", as disclosed in paragraph [0006].

Regarding **claim 3**, Herley discloses everything as claimed above (see claim 1). In addition, Herley discloses that once the object detection module 220 identifies a possible object, the location or position of the possible object within the media stream 210 is noted in an object database 230, which reads on claimed "the step of storing bookmarking information which identifies the location of at least one of said repeating segments in said storage device", as disclosed in paragraph [0083].

Regarding **claim 4**, Herley discloses everything as claimed above (see claim 1). In addition, Herley discloses that an "object" is defined to be any section of non-negligible duration that would be considered to be a logical unit, when identified as such

by a human listener or viewer. For example, a human listener can listen to a radio station, or listen to or watch a television station or other media broadcast stream and easily distinguish between non-repeating programs, and advertisements, jingles, and other frequently repeated objects, which reads on claimed "step of classifying said repeating segments based on their duration", as disclosed in paragraph [0010].

Regarding **claim 5**, Herley discloses everything as claimed above (see claim 4). In addition, Herley discloses that if the BPM (beats per minute) of an audio media stream remains approximately the same over an interval of 30-seconds or longer this can be taken as an indication that a song object probably exists at that location in the stream. A constant BPM for a lesser duration provides a lower probability of object existence at a particular location within the stream, which reads on claimed "determining whether said duration is greater than or less than a predetermined elapsed time duration", as disclosed in paragraph [0102].

Regarding **claim 6**, Herley discloses everything as claimed above (see claim 5). In addition, Herley discloses that if the BPM (beats per minute) of an audio media stream remains approximately the same over an interval of 30-seconds or longer this can be taken as an indication that a song object probably exists at that location in the stream. A constant BPM for a lesser duration provides a lower probability of object existence at a particular location within the stream, which reads on claimed "wherein repeating segments having a duration greater than said predetermined elapsed time duration are classified as music recordings", as disclosed in paragraph [0102].

Regarding **claim 7**, Herley discloses that once the media stream has been acquired, the stored media stream is examined to determine a probability that an object of a sought class, i.e., song, jingle, video, advertisement, etc., is present at a portion of the stream being examined, which reads on claimed "recording said broadcast radio programming on a signal storage device", as disclosed in paragraph [0024] and further exhibited in figure 1 elements (140,150). Herley further discloses with respect to audio identification, many such schemes are referred to as "audio fingerprinting" schemes. Typically, audio fingerprinting schemes take a known object, and reduce that object to a set of parameters, such as, for example, frequency content, energy level, etc. These parameters are then stored in a database of known objects. Sampled portions of the streaming media are then compared to the fingerprints in the database for identification purposes, which reads on claimed "searching said broadcast radio programming for matching program segments that substantially duplicate one another", as disclosed in paragraph [0006]. In addition, Herley discloses that once the object detection module 220 identifies a possible object, the location or position of the possible object within the media stream 210 is noted in an object database 230, which reads on claimed "storing information specifying the location of at least one of said matching program segments", as discloses in paragraph [0083].

Regarding **claim 8**, Herley discloses everything as claimed above (see claim 7). In addition, Herley discloses that identifying repeat instances of an object includes first instantiating or initializing an empty "object database" for storing information such as, for example, pointers to media object positions within the media stream, parametric

information for characterizing those media objects, metadata for describing such objects, object endpoint information, or copies of the objects themselves, which reads on claimed "wherein said information specifying the location of at least one of said matching program segments contains data indicating the duration of said matching program segments", as disclosed in paragraph [0019].

Regarding **claim 9**, Herley discloses everything as claimed above (see claim 7). In addition, Herley discloses identifying repeat instances of an object includes first instantiating or initializing an empty "object database" for storing information such as, for example, pointers to media object positions within the media stream, parametric information for characterizing those media objects, metadata for describing such objects, object endpoint information, or copies of the objects themselves. Note that any or all of this information can be maintained in either a single object database, or in any number of databases or computer files, which reads on claimed "extracting a series of fingerprint data values from said broadcast programming, each of said fingerprint data values being indicative of predetermined characteristics of particular segment of said broadcasting programming, storing said fingerprint values in an addressable memory device", as disclosed in paragraph [0019]. Herley further discloses automatic identification and segmentation of repeating media objects is achieved by comparing portions of the media stream to locate regions or portions within the media stream where media content is being repeated, which reads on claimed "searching for matching sequences of fingerprint values", as disclosed in paragraph [0020].

Regarding **claim 10**, Herley discloses everything as claimed above (see claim 9). In addition, Herley discloses that the object database is used to store information such as, for example, any or all of: pointers to media object positions within the media stream; parametric information for characterizing those media objects; metadata for describing such objects; object endpoint information; copies of the media objects; and pointers to files or other databases where individual media objects are stored, which reads on claimed "wherein said substep of searching for matching sequences of fingerprint values comprises creating a sorted index to sequences of said fingerprint values and employing said sorted index to locate matching sequences of index values", as disclosed in paragraph [0116].

Regarding **claim 11**, Herley discloses everything as claimed above (see claim 9). In addition, claim 9 is interpreted and thus rejected for the reasons set forth in the above rejection of claim 9. Claim 9 describes a method for identifying recordings in broadcast radio programming containing other content and claim 11 simply reiterates. Thus claim 11 is rejected.

Regarding **claim 12**, Herley discloses that the object extractor described herein successfully addresses these and other issues while providing many advantages. For example, in addition to providing a useful technique for gathering statistical information regarding media objects within a media stream, automatic identification and segmentation of the media stream allows a user to automatically access desired content within the stream, or, conversely, to automatically bypass unwanted content in the media stream. Further advantages include the ability to identify and store only desirable

content from a media stream; the ability to identify targeted content for special processing; the ability to de-noise, or clear up any multiply detected objects, and the ability to archive the stream more efficiently by storing only a single copy of multiply detected objects, which reads on claimed "processing said signal to create a sequence of identification values indicative of the content of a corresponding sequence of intervals of said program signal", as disclosed in paragraph [0013]. In addition, Herley further discloses a system and method for automatically identifying and segmenting repeating media objects in a media stream identifies such objects by examining the stream to determine whether previously encountered objects have occurred, which reads on claimed "searching said sequence of identification values for substantially matching patterns of values indicative of said repeating content", as disclosed in paragraph [0014].

Regarding **claim 13**, Herley discloses everything as claimed above (see claim 12). In addition, Herley discloses that any of a number of well-known conventional frequency, time, image, or energy-based techniques for comparing the similarity of media objects can be used to identify potential object matches, depending upon the type of media stream being analyzed. For example, with respect to music or songs in an audio stream, these algorithms include, for example, calculating easily computed parameters in the media stream such as beats per minute in a short window, stereo information, energy ratio per channel over short intervals, and frequency content of particular frequency bands; comparing larger segments of media for substantial similarities in their spectrum; storing samples of possible candidate objects; and

learning to identify any repeated objects. Additionally, it is known that when using the wavelet transform, wavelets are localized in both frequency and time compared to the standard Fourier transforms which is localized in frequency. Herley discloses using any well-known conventional technique involving frequency and time, which therefore reads on claimed "wherein said step of processing said signal to create a sequence of identification values employs a wavelet transform", as disclosed in paragraph [0068].

Regarding **claim 15**, Herley further discloses that this invention is related to media stream identification and segmentation, and in particular, to a system and method for identifying and extracting repeating audio and/or video objects from one or more streams of media such as, for example, a media stream broadcast by a radio or television station. Herley goes on to disclose that identifying repeat instances of an object includes first instantiating or initializing an empty "object database" for storing information such as, for example, pointers to media object positions within the media stream, parametric information for characterizing those media objects, metadata for describing such objects, object endpoint information, or copies of the objects themselves, which reads on claimed "employing a wavelet transform to extract first sequence of wavelet coefficient values from said pre-recorded program signal, employing said wavelet transform to extract a second sequence of wavelet coefficient values from said source program signal", as disclosed in paragraphs [0004] and [0019] respectively.

Regarding searching said second sequence for the values substantially matching at least a portion of said first sequence of wavelet coefficient values, Herley discloses

that once a possible object is identified within the stream, confirmation of an object as a repeating object is achieved by an automatic search for potentially matching objects in an automatically instantiated dynamic object database, followed by a detailed comparison between the possible object and one or more of the potentially matching objects, which reads on claimed "searching said second sequence for the values substantially matching at least a portion of said first sequence of wavelet coefficient values", as disclosed in paragraph [0018].

Regarding **claim 16**, Herley discloses everything as claimed above (see claim 15). In addition, Herley discloses that given an audio stream which contains objects that repeat and objects that do not repeat, the system and method described herein automatically identifies and segments repeating media objects in the media stream, while identifying object endpoints by a comparison of matching portions of the media stream or matching repeating objects, which reads on claimed "converting said first sequence of wavelet coefficients into at least two identification fingerprint values characterizing the beginning and ending of said pre-recorded program segment", as disclosed in paragraph [0015] and further exhibited in figure 3B step 360. Herley further discloses parametric information for characterizing those media objects, metadata for describing such objects, object endpoint information, or copies of the objects themselves. In addition, once a probable object has been identified in the stream, parametric information for characterizing the probable object is computed and used in a database query or search to identify potential object matches with previously identified probable objects, which reads on claimed "converting said second sequence of wavelet

coefficient values into a succession of fingerprint values charactering successive samples of said source program signal, and searching said succession of fingerprint values for said identification fingerprint values", as disclosed in paragraphs [0019] and [0070] respectively.

Regarding **claim 18**, Herley discloses everything above (see claim 16). In addition, Herley discloses as with the selection of the portion for comparison to the media stream, the portions which are compared to the selected segment or window can be taken sequentially beginning at either end of the media stream, or can even be randomly taken from the media stream, which reads on claimed "wherein said first sequence of wavelet coefficient values is extracted from different portion of said pre-recorded program signal", as disclosed in paragraph [0021].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herley in view of Ward et al. (United States Patent Application Publication 2002/0133499), herein referenced as Ward.

Regarding **claim 14**, Herley discloses everything as claimed above (see claim 12). However, Herley fails to disclose "processing different portions of said signal using wavelet transform to generate a plurality of different wavelet coefficients, and combining

predetermined groups of said wavelet coefficients to create said sequence of identification values", however the examiner maintains that it was well known in the art to provide processing different portions of said signal using wavelet transform to generate a plurality of different wavelet coefficients, and combining predetermined groups of said wavelet coefficients to create said sequence of identification values, as taught by Ward.

In a similar field of endeavor, Ward discloses a system and method for acoustic fingerprinting. In addition, Ward discloses having completed the detailed explanation of the block 34 of FIG. 2 as shown at FIG. 3, reference is made back to FIG. 2 where the process continues at block 46. At this block, a Haar wavelet transform, with transform size of 64 samples, using [fraction (1/2)] for the high pass and low pass components of the transform, is computed across the frame samples. Each transform is overlapped by 50%, and the resulting coefficients are summed into a 64 point array, which reads on claimed "processing different portions of said signal using wavelet transform to generate a plurality of different wavelet coefficients, and combining predetermined groups of said wavelet coefficients to create said sequence of identification values", as disclosed in paragraph [0035] and further exhibited in figure 2.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Herley by specifically providing processing different portions of said signal using wavelet transform to generate a plurality of different wavelet coefficients, and combining predetermined groups of said wavelet

coefficients to create said sequence of identification values, as taught by Ward for the purpose of representing functions that have may have discontinuities.

Regarding **claim 17**, Herley discloses everything as claimed above (see claim 16). However, Herley fails to disclose "each of said fingerprint values comprises a binary word in which selected bits represent corresponding ones of said wavelet coefficients", however the examiner maintains that it was well known in the art to provide each of said fingerprint values comprising a binary word in which selected bits represent corresponding ones of said wavelet coefficients, as taught by Ward.

Regarding each of said fingerprint values comprising a binary word in which selected bits represent corresponding ones of said wavelet coefficients, Ward discloses that the fingerprint resolution component is located on a central server, although methods using a partitioning scheme based on the fingerprint database hash tables can also be used in a distributed system. Depending on the type of fingerprint to be resolved, the architecture of the server will be similar to FIG. 7 for concatenation model fingerprints, and similar to FIG. 8 for aggregation style fingerprints. Within the concatenation system, the identifiers in the feature vector.fwdarw.identifier database are unique GUIDs, which allows the return of a unique identifier for an identified fingerprint One of ordinary skill in the art would recognize that the binary word is a unique identifier, which therefore reads on claimed "each of said fingerprint values comprises a binary word in which selected bits represent corresponding ones of said wavelet coefficients", as disclosed in paragraph [0039].

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Herley by specifically providing each of said fingerprint values comprises a binary word in which selected bits represent corresponding ones of said wavelet coefficients, as taught by Ward for the purpose of efficiently looking up stored fingerprint values.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Q. Huerta whose telephone number is 571-270-3582. The examiner can normally be reached on M-F(Alternate Fridays Off) 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jefferey Harold can be reached on 571-272-7519. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alexander Q Huerta
Examiner
Art Unit 4115

October 16, 2007

RYAN YANG 10/17/07
RYAN YANG
PRIMARY EXAMINER